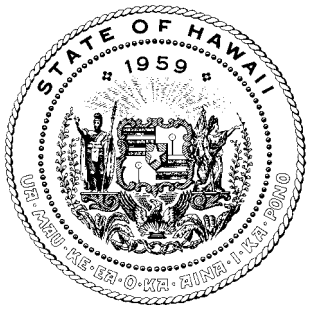
REPORT TO THE TWENTY-THIRD LEGISLATURE

2006 REGULAR SESSION

RELATING TO THE HAWAII INVASIVE SPECIES PROGRAM



PREPARED BY

THE STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE

IN RESPONSE TO SECTION 18.1 OF ACT 41, SESSION LAWS OF HAWAII 2004
AND
SECTION 19 OF ACT 178, SESSION LAWS OF HAWAII 2005

HONOLULU HAWAII
NOVEMBER 2005

In response to Section 18.1 of Act 41, Session Laws of Hawaii 2004:
Hawaii Invasive Species Council
Expenditures for Fiscal year 2004-2005

Section 18.1 of Act 41, Session Laws of Hawaii 2004, provided that the Department of Land and Natural Resources submit detailed reports each year that shall include but not be limited to the amount of expenditures, the amount of revenues, and the effectiveness of the Hawaii Invasive Species Program. This report, in part, is intended to satisfy the 2006 reporting requirement.

The Administration's invasive species budget initiative called for the expenditure of $4,000,000 in state funds for a one year pilot project to provide support for both the operations of the Hawaii Invasive Species Council (HISC) and its partnerships with federal, state, county, and private entities to develop and implement a comprehensive, state-wide invasive species program. The four HISC program areas (and their corresponding HISC working groups) are: 1) Prevention (for pests not present in Hawaii), 2) Response and Control (for established pests), 3) Research and Technology, and 4) Public Outreach. An additional self imposed requirement was that state dollars were to be matched (1:1) by non-state dollars or equivalent in-kind services, making this an overall effort of at least $8 million.

Proposed HISC Budget for Fiscal Year 2004-2005:

The state funding is broken into four integrated components:

1) Building up **Prevention** capabilities **($1,340,000, 33.5% of total funding)** such as; 1) Support for quarantine inspectors; 2) Specialists to identify new insects, plants and diseases and 3) Needed infrastructure to lead invasive species prevention efforts;

2) Expand **Response and Control** programs **($1,700,000, 42.5% of total funding)** to conduct invasive species detection, response and control actions on the ground as well as developing a much needed aquatic response team;

3) Establish **Research and Technology** funding **($700,000, 17.5% of total funding)** for critical projects such as biological control, more effective increased survey and detection efforts, taxonomic identification, master geographical information system and associated database management as well as a matching grants program to the private and university sector for developing and applying technology for improved efficiencies in invasive species prevention and control efforts; and

4) Developing a **Public Outreach** Program **($260,000, 6.5% of total funding)** in cooperation with the public and private sector for visitors and residents to increase voluntary compliance of quarantine laws, avoid accidental introductions of

invasive species, and establishing an effective pest hotline that delivers timely information to managers on the ground.

Hawaii Invasive Species Council
Prevention Projects

Project Goals for FY 2004-2005

- Support for quarantine inspectors;
- Contract specialists to identify new insects, plants and diseases and
- Fund needed infrastructure to lead invasive species prevention efforts.

Prevention projects budget:

Hawaii Department of Agriculture(HDOA)	$ 943,000
United States Department of Agriculture/ Wildlife Services (WS)	$ 110,000
Department of Land and Natural Resources/Division Aquatic Resources	$ 86,000
Department of Health (DOH)	$ 201,000
Total	$1,340,000

The lead agency for the Prevention Working Group (PWG) is the HDOA. The PWG met on August 6, 2004 and September 15, 2004 to discuss the status of prevention efforts in Hawaii, review the proposed PWG Task List, and discuss, develop, and recommend a budget for the funding of invasive species prevention programs. This plan was accomplished through a transfer of $943,000 from the DLNR to the HDOA and $201,000 to the DOH in the second quarter of the 2005 Fiscal Year. The remaining funds were encumbered via a cooperative service agreement between the DLNR and USDA/Wildlife Services and spend down directly by DLNR – Division of Aquatic Resources.

HDOA Prevention Projects

Goals:

- Conduct a risk analysis to determine the risk of entry of invasive species through ports of entry across the State
- Determine the effectiveness of current prevention efforts.

To accomplish this, HDOA planned to hire 13 research aid positions through the Research Corporation of the University of Hawaii (RCUH) to collect and analyze the data from inspections of goods entering into Hawaii. Data on commodities and pests entering the State will be collected during intense blitz inspections where 100% of commodities will be inspected, during enhanced inspections where thorough inspections of high-risk commodities, and during regular day-to-day inspections. The data will be analyzed concurrently with the inspections so that monthly reports can be generated.

Matching funds were provided by USDA and Federal Aviation Administration (FAA) grants.

Hawaii Department of Agriculture Prevention Projects Budget:

Salary and fringe (13 FTE)	$278,000
Equipment & Supplies	$ 1,200
Database development	$100,000
Risk Assessments	$563,800
Total	$943,000

Key Accomplishments (full report Attachment 1):

- Evaluated using private shipping databases to identify the routes that pose the highest risk of introducing invasive species, especially the Red Imported Fire Ant into Hawaii.
- Met with quarantine staff from Australia, Taiwan and New Zealand who are also dealing with Red Imported Fire Ant prevention programs.
- Preliminary results from research inspections March 20-June 4, 2005 (not all data included;
    - Over 30,000 parcels were inspected
    - 266 Insect Interceptions, 38 species not known to occur in Hawaii (NKO), most from domestic origins
    - 124 Disease Interceptions, 43 NKO, most from foreign origins
    - 540 parcels Refused Entry or Treated/Destroyed
- Surveyed all certified nurseries on the Big Island, Maui and Oahu for coqui frogs.

WS Prevention Project

Goals:

- Conduct inspections of cargo containers leaving Guam destined for Hawaii
- Determine the feasibility of a cargo certification program for Guam shipments.

For the first year of this project, WS is conducting an examination of the effort expended and the time required to inspect and certify all outbound cargo from four cooperative warehouses. The cargo will be inspected for the presence of brown treesnakes and subsequently sealed after inspection to prevent the accidental intrusion of brown treesnakes. The respective warehouses stage the outbound cargo in an agreed upon area where the canine handler will visually inspect the cargo. The canine detector dog will then sniff the cargo, and then the handler will observe the contents being loaded into the container where it will then be sealed.

USDA APHIS Wildlife Services Project Budget:

Salary and fringe	$90,500

Equipment & Supplies	$ 9,750
Vehicle use	$ 9,750
Total	$110,000

Key Accomplishments (full report Attachment 2):

- Time budgets for inspection were created identifying potential time saving changes in the inspection protocol to develop with shippers .
- At this time, staffing has been identified as inadequate to carry out a full cargo certification process for commercial cargo departing Guam for Hawaii.

DLNR Prevention Projects

Goal:

- Increase communication between the Division of Aquatic Resources (DAR), other state agencies, and the shipping industry to minimize aquatic invasive species introductions.

Three parts to carry out the project goal include; establishing a communication link between DAR, DLNR's Division of Boating and Ocean Recreation, and Department of Transportation - Harbors Division (HDOT-HAR), participate in National Ballast Water Information Clearinghouse pilot project; and carry out an outreach campaign to encourage participation. National Oceanic and Atmospheric Administration (NOAA) grants for these projects provide matching funds.

HDOA Prevention Projects Budget:

Interagency communication	$51,000
Ballast Water Project	$20,000
Outreach	$15,000
Total	$86,000

Key Accomplishments (full report Attachment 3):

- Established working relationship with the National Ballast Water Information Clearinghouse.
- Developed four educational handouts for the shipping industry on ballast water and hull fouling, administrative rules for ballast water that are being proposed by DAR, snowflake coral and the Atlantic barnacle.
- Acquired limited information on vessel arrival from HDOT - HAR.

DOH Prevention Project

Goal:

- Improve surveillance and rapid response capabilities to address the threat of West Nile Virus (WNV) importation.

DOH – Vector Control (VC) Branch maintains a system of gravid traps at major ports of entry state-wide for detection of WNV. New Jersey light traps are also maintained state-wide for detection of new, immigrant mosquito species.

Mosquitoes were collected using gravid traps, some purchased with HISC funds, and then sorted and pooled by VC staff state-wide. Because the Neighbor Island VC programs are running their gravid traps seven (7) days a week, twenty-four (24) hours per day, many of the gravid trap parts, especially fan motors and batteries, have had to be replaced. In many cases, the HISC funds have paid for replacement parts and new traps. Matching funds for WNV projects has been sought from the Center for Disease Control and the Department of the Interior.

DOH Prevention Project Budget:

Computer hardware and software	$ 25,000
Response equipment and supplies	$176,000
Total	$201,000

Key Accomplishments (full report Attachment 4):

- Both maintained and expanded the network of mosquito traps at ports to monitor for new mosquito species as well as emerging diseases.
- Developed the equipment to initiate a ground-based response to a disease outbreak of WNV.
- Developed the equipment and training to map trapping and control operations and enter and share data across the state for rapid analysis.

HISC
Response and Control Projects

Project Goals for FY 2004-2005

- Support the work of the Island Invasive Species Committees;
- Develop an aquatic response team to survey, monitor and respond to marine and freshwater invasive species;
- Improve capability to conduct invasive species early detection and rapid response actions.

Response and Control projects budget:

Statewide - Aquatic Invasive Species Team	$ 300,000
Hawaii County	$ 420,000

Maui County	$ 340,000
City and County of Honolulu - Oahu	$ 320,000
Kauai County	$ 320,000
Total	$1,700,000

The Established Pests Working Group (EWG) met on July 27, 2004 to review efforts in Hawaii to control established pests by the HDOA, DLNR and DOH, review the proposed EWG Task List, review the list of invasive species generated by the Hawaii Invasive Species Council and discuss invasive species control programs. The lead agency for the EWG is the DLNR.

The work of the Island Invasive Species Committees on priority pests (economic, agricultural, and environmental) in each county will be supported along with a pilot marine response program being developed by the DLNR-DAR resources in cooperation with federal, private and county resources. The funds will be obligated in the second quarter ($700,000 -G 042), ($200,000 – S 314), third quarter ($100,000 S 314) and fourth quarter ($200,000 S 314).

Big Island Invasive Species Committee (BIISC)

Key Accomplishments:

- Project funding was used to hire additional field crew workers, a Geographic Information System (GIS) Specialist, and an education/outreach specialist, and to provide necessary support for these positions and the expanded operations
- The supplemental funding released in January 2005 was used to purchase supplies and citric acid to increase coqui frog control in conjunction with federal and County partners.

BIISC)provides support and coordination for efforts to control the largest infestations of both coqui frogs and miconia in the State. The principal goals for the additional HISC funds were to: develop and expand the capacity of BIISC staff and other individuals on the Island of Hawaii to detect new, potentially invasive species and new locations of known priority target species; continue on-going efforts to contain the infestations of priority invasive species such as miconia, plume poppy and coqui frogs; and continue outreach and education efforts to target groups and build partnerships with neighborhood groups and others to prevent and control invasive species on Hawaii.

Salaries/Benefits	$307,698
Services and Supplies	$ 36,550
Utilities, Communications & Base yard support	$ 13,350
Vehicle	$ 30,000
Other Equipment	$ 5,000
Administration expenses	$ 18,202

Travel	$ 9,200
Total	$420,000

Maui Invasive Species Committee (MISC)

Key Accomplishments:

- Expanded key county efforts to control coqui frogs and miconia,
- Five field staff were hired and an additional four temporary staff were hired with the funds that were released in January 2005.

MISC identified three key objectives to address with the HISC funding; increase the number of trained observers surveying Maui County for known or potentially invasive plant species, expand surveys for existing and potential species to target for eradication (including miconia, pampas grass, fountain grass, ivy gourd, giant reed, rubber vine, and veiled chameleon), and determine the coqui frog distribution on Maui and control or eradicate local populations where possible. The additional funds were matched by the County of Maui, the Maui Board of Water Supply and federal grants.

Salaries/benefits	$236,105
Helicopter	$ 10,500
Supplies/utilities, etc.	$ 15,397
Travel-	$ 10,189
Contract fees	$ 10,000
Truck	$ 26,223
Overhead	$ 10,836
Indirect Cost = 6%	$ 20,750
Total	$340,000

Oahu Invasive Species Committee (OISC)

Key Accomplishments:

- This year alone over 3,500 acres surveyed and 4,809 individual plants of miconia were controlled,
- Core OISC staff were increased by three positions along with the associate support services to address other top priority species especially miconia.

OISC hired a temporary crew of five to control coqui frogs during key summer months. HISC funding was also used for a complementary public service announcement campaign to alert residents to the presence of coqui frogs and encourage new reports. Work on other species that are declared state noxious weeds but still incipient on Oahu

was expanded for Himalayan blackberry, bush beardgrass, smoke bush, fountain grass, fire tree, pampas grass and fireweed.

Salary/benefits	$220,861
Helicopter rentals	$ 50,000
Materials supplies (w/ computer, printing)	$ 30,000
RCUH overhead:	$ 19,139
Total	$320,000

Kauai Invasive Species Committee (KISC)

Key Accomplishments:

- With miconia and coqui frogs are top priorities, HISC funding was used to purchase materials for all targeted work and a 200 gallon sprayer for spraying citric acid,
- Developed and began implementing a strategic plan for coqui frog eradication on Kauai.

KISC utilized the HISC funding for additional personnel, equipment, and materials. By increasing KISC staff by five people, KISC was able to fill positions that were critical to increasing KISC's capacity. Also, during this period, KISC was able to move both office and base yard with HISC funding providing the needed lease and re-location costs. The addition of a vehicle to the KISC fleet has also provided needed transportation for the additional staff.

Salary and benefits	$165,671
Services and supplies	$ 69,143
Lease Payments	$ 13,000
Vehicle	$ 25,000
Admin Support	$ 47,186
Total	$320,000

Aquatic Invasive Species Team

Key Accomplishments:

- Developed an unprecedented dedicated aquatic response team,
- Rapid survey and treatment of barges bound for the Northwest Hawaiian Islands to prevent the introduction of alien algae,
- Testing of the new algae control tool – the Super Sucker.

DLNR - DAR developed an innovative Aquatic Invasive Species Management project to include an experimental aquatic invasive species response team. This project focused on alien and invasive species issues in Hawaii's freshwater and marine environments. The project funded 5 field staff to respond to alien species issues across the State. Key species and projects for the first year operations for this team included: 1) Eradication of snowflake coral at Port Allen, Kauai; 2) Developing control methods for alien algae using the "Super Sucker," a unique vacuum developed to collect invasive algae off the reefs; 3) Survey for invasive marine algae in South Oahu; and 4) Control of incipient species including a recently introduced *Discosoma* sp. or disk anemone. The State of Hawaii Aquatic Invasive Species (AIS) Management Plan and the Aquatic Invasive Species Advisory Group will guide future activities and objectives of this project. At the end of the fiscal year $5,581 was not encumbered.

Salaries/ fringe	$174,876
Equipment	$ 41,817
Travel	$ 19,342
Supplies/misc	$ 27,658
Bishop Museum	$ 15,225
Indirect	$ 15,501
Total	$294,419

HISC
Research and Technology Projects

Project Goals for FY 2004-2005

- Encourage researchers to address the problems created by alien invasive species.
- Encourage the implementation of new technology to prevent the establishment or the control of invasive species
- Develop effective, science-based management approaches to control alien invasive species.
- Effectively communicate the results of research to the field where it can be applied.
- Promote interagency collaboration and stimulate new partnerships.

Research and Technology projects budget:

Research and Technology services grants…….	$599,788
HISC support……	$100,212
Total……	$700,000

Timely information about invasive species is a necessary component of successfully improving invasive species prevention and control in Hawaii. A request for research and technology proposals focusing on invasive species was sent out three times over the last

three quarters of the Fiscal Year. Applicants were asked to identify new matching funds for their proposed projects and grantees will report on their results for the HISC. The request for proposals and proposal review was developed and overseen by HISC agency staff assigned by the council members, county representatives, and representatives of key federal and private agencies.

A request for proposals was publicized on the State web site three times. Seventy-three proposals were received, but two were not considered because of excess length. The review committee consisted of nine representatives from Department of Business Economic Development and Tourism (DBEDT), DOH, DLNR (both Division of Forestry and Wildlife (DOFAW) and DAR), United States Fish and Wildlife Service (USFWS), USDA Forest Service, and Bishop Museum. Seventeen contracts (24% percent of those reviewed) were awarded at a total of $599,788 (15% of the HISC's $4 million budget). The total non-state match of HISC funds provided by these projects is $610,000. Four awards went to two private corporations, four to the federal government, seven to universities, and one to the DOH. Three projects address public health, four each agriculture, commerce, and aquatic ecosystems, and ten address terrestrial ecosystems. Three projects promote prevention strategies; three promote early detection and rapid response; fifteen promote control efforts.

The HISC Interim Strategic Plan recommends that 30% of the HISC budget goes towards this program. However, the Review Committee believes that the number of high-quality proposals received is commensurate with the current level of funding. Therefore, for the next year, or until the number of high-quality proposals increases, the review committee recommends that the balance of this program's budget be shifted to the other working groups.

Summary of HISC Research & Technology Projects, FY05		
Proposals	Received	73
	Reviewed	71
	Awarded	17
Reviewers	Individuals	9
	Agencies	7
Amounts	Awarded	$599,788
	Of Match	610
Contractors	University	8
	Private	4
	Federal	4
	State	1
Strategy (may address more than one)	Control	15
	Prevention	3
	Early Detection & Rapid Response	3
	Public Outreach	0
Threats Addressed (may address more than one)	Terrestrial	10
	Aquatic	5

	Commerce	4
	Agriculture	4
	Public Health	3

Research and Technology Grants Awarded:

	Project Title	Principal Investigator	Institution	Amount Awarded
1.	Development of methods to control alien algae on Hawaii's reefs	Cynthia Hunter	University of Hawai'i, Manoa	$82,980
2.	Accelerated evaluation of insects in Costa Rica and Brazil for biocontrol of *Miconia calvescens*	Tracy Johnson	USDA Forest Service Institute of Pacific Islands Forestry, Hilo	$78,747
3.	Ecology of a specialized nudibranch predator (*Phyllodesmium poindimiei*) and implications for potential biocontrol of an invasive octocoral [snowflake coral] (*Carijoa riisei*) in Hawai'i	Rob Toonen	Hawaii Institute of Marine Biology, University of Hawai'i	$52,018
4.	Identifying Sex Pheromone Components of the Nettle Caterpillar, *Darna pallivitta* (Moore), to Facilitate Detection and Pheromone Disruption Control	Eric Jang	USDA Agricultural Research Center, Hilo	$50,000
	Project Title	**Principal Investigator**	**Institution**	**Amount Awarded**
5.	Community level impacts of invasive ants in Hawaiian coastal communities	Sheldon Plentovich	University of Hawai'i, Manoa	$47,359

6.	Ecology and management implications of an invasive soft coral species [snowflake coral], *Carijoa riisei* in Hawai'i	Rob Toonen	Hawaii Institute of Marine Biology, University of Hawai'i	$40,534
7.	Pilot Multi-Agency Early Detection Reporting System [for invasive species]	Kevin Hopkins	Pacific Aquaculture and Coastal Resources Center,University of Hawai'i at Hilo	$37,400
8.	Quarantine testing for an insect for biocontrol of *Miconia calvescens*	Tracy Johnson	USDA Forest Service Institute of Pacific Islands Forestry, Hilo	$37,275
9.	Developing a database to provide risk analysis of reptile and amphibian introductions	Fred Kraus	Bishop Museum	$36,250
10.	Quarantine testing for an insect for biocontrol of *Tibouchina herbacea*	Tracy Johnson	USDA Forest Service Institute of Pacific Islands Forestry, Hilo	$28,075
11.	Ecological consequences of the coqui frog invasion into Hawai'i	Karen Beard	Utah State University	$26,800
12.	Detecting the Veiled Chameleon (*Chamaeleo calyptratus*) on Maui: A Research Proposal to Enhance Control of an Injurious Species	David Duffy	MISC	$25,000
13.	Thermal Treatment System [for coqui in nursery stock]	Bill Durston	Leilani Nursery, Oahu	$22,675
	Project Title	**Principal Investigator**	**Institution**	**Amount Awarded**

14.	Identifying Chemical Attractants and Repellents to Monitor and Manage the Black Twig Borer (*Xylosandrus compactus*) in Coffee Orchards, Koa Reforestation Areas, and Threatened and Endangered Species Restoration Plantings	Nick Dudley	Hawai'i Agriculture Research Center, Aiea	$21,500
15.	Determination of foraging and movement patterns of *Aratinga erythogenys* [red-masked conure] (Aves: Psittacidae) using mist-net live capture and radio telemetry on O'ahu Island, Hawai'i	Kirsten Silvius	Environmental Center, University of Hawai'i, Manoa	$10,111.95
16.	Survey and Mapping of the New Invasive Mosquito: *Aedes japonicus japonicus* on the Island of Hawai'i	Linda Larish	DOH	$2,243
17.	Effects of fountain grass management strategies on the demographics of a tropical dry forest plant community and on the promotion of a potential new invader	Danielle Frohlich	University of Hawai'i, Manoa	$820
			Total Awarded	$599,788

HISC support

Funds to hire a HISC Plan Manager.
The HISC Manager:

- Provides primary staff support for HISC projects
- Gathers information to identify emerging issues and opportunities relevant to HISC's mission
- Tracks funding, issues, regulations and legislation relevant to HISC's mission
- Reviews and tracks grant proposals for HISC funding and collect and review reports on funding.

Total $100,212

HISC
Public Outreach Projects

Project Goals for FY 2004-2005

- In cooperation with public and private entities, increase voluntary compliance with quarantine laws;
- Avoid accidental introductions of invasive species;
- Establish an effective pest hotline that delivers timely information to managers on the ground.

Public Outreach projects budget:

HISC Outreach Staff salary, benefits	$102,495
Outreach supplies, projects	$50,000
Small grant program	$107,505
Total	$260,000

Key accomplishments by HISC plan task:

1. Identify high priority messages to focus education efforts and develop outreach plans with the Department of Education (DOE) (2 years).

• Recognizing that good curricula exists and partnerships are already in place with the DOE, HISC funds were provided to groups via the Outreach Grant Program for the Ho`ike Curriculum on Fire Ants, the Leeward Community College invasive species outreach video series, the Outside Hawaii show dedicated to invasive species, the Malama I Ka Aina curriculum for schools and the Moanalua Gardens Foundation Ohia Project to update the "Silent Invasion" curriculum for Hawaii public schools.

• HISC Outreach staff is also collecting information on the available curricula and educational materials into a single database on the web to make it easier for Hawaii teachers to find age-appropriate activities and lesson plans on invasive species (project in progress, product will be posted on the HISC website).

• HISC Outreach staff has formed new outreach partnerships with the Pacific American Foundation for outreach to Pacific islanders living in Hawaii, *Malama Kalihiwai* & *Save our Seas* and the Garden Island Arts Council to reach segments of the community not currently reached.

2. Develop a business round table of private sector transportation entities (e.g., airlines, shipping) to identify invasive species outreach opportunities (2 years).

• Outreach staff have met with representatives from public and private sector to identify outreach opportunities including: HDOT's Divisions of Harbors and Airports, Honolulu City Council and Mayor's office, DOH, USFWS, and others. While there is not much interest by transportation entities in forming a round table, there are opportunities for outreach that are not currently being tapped, such as articles in employee newsletters, etc.

3. Develop or utilize an existing website for in-reach to HISC members and partners as well as outreach for the general public for pertinent invasive species issues (1 year).

• Two years ago the Coordinating Group on Alien Pest Species secured funding for a website designer to design a new, user-friendly site for CGAPS and the ISCs. This year it was decided that a new HISC site could be part of this scope of work. All information from the existing sites are due at Info Grafik (the designer) by the end of August 2005. They will produce a Beta-design for our review shortly after. The site will be hosted by the Pacific Basin Information Node and updates will be posted by one of their staff. The HISC outreach staff is assisting in gathering all information from existing sites to move to the new site.

4. Develop a series of invasive species Public Service Announcements (PSA) in cooperation with a variety of media outlets to encourage travelers and residents to not introduce or transport invasive species into and between islands (1 year and ongoing).

• The Outreach Working Group agrees that one clear need identified in public awareness surveys conducted by the Coordinating Group on Alien Pest Species (CGAPS) is that less than 5% of the population is aware that there is a pest hotline, almost nobody knew the number or the agency to call, and neighbor island residents were reluctant to call a toll-number. HISC funds will be used to institute a new, Statewide Pest Hotline number, 643-PEST, to address these issues. Calls to 643-PEST can be dialed from anywhere in the State, without any prefix. The computer system that accompanies the number will be able to sort the calls so that calls originating on Maui will be routed to the Maui office, and calls will be forwarded to the HDOA Airport office after hours and on weekends. The current Pest Hotline number, 586-PEST will remain in existence.

• The Working Group and staff are assisting CGAPS on the Silent Invasion media campaign, which will include five 30-second PSAs. The PSAs will include the following messages:

1. "Protect Hawaii—Don't Plant a Pest."
Announcer says: Miconia…Fountain grass…banana poka…These pretty plants started in people's gardens, but wind and animals spread these seeds into the forest. These plants are now hurting Hawaii's fragile environment. Today, we can make better gardening choices for our islands, by choosing native Hawaiian plants OR plants that are non-invasive. Ask your nursery about non-invasive, environmentally safe plants. Protect Hawaii, don't plant a pest.

2. "Protect Hawaii—Don't Pack a Pest."
Announcer says: Alien Insect pests…They can hide in fruit, vegetables, flowers and soil. These pests cost everyone money, in diseased crops and higher prices. How do they get here? It starts simply enough. When we fly home to Hawaii, we sometimes forget that all fruits and plants must be inspected for alien insects and diseases. Most Items are returned after inspection. Help protect Hawaii. Don't pack a pest.

3. "Protect Hawaii—Report a Pest" #1
Announcer says: Red Imported Fire ants and Biting sand flies…just two of the many invasive pests that could damage the ecosystem, economy and our health if they arrive in Hawaii. How could this happen? Our Islands receive cargo every day that could easily conceal a nest of aggressive fire ants, biting sand flies, or other unwanted pests. Early detection is our best defense. Report unusual insects to the Pest Hotline, 643-PEST. Stop the Silent Invasion. Report a pest.

4. "Protect Hawaii—Report a Pest" #2
Announcer says: The Brown Tree Snake …Like all snakes, this snake is ILLEGAL in Hawaii. These and other illegal reptiles can damage the ecosystem, and harm our families. But you can help protect Hawaii today and for future generations. If you EVER see a snake or unusual reptile, call the Pest Hotline at 643-PEST. Illegal animals can be turned in, no questions asked, by calling the Pest Hotline. Help protect Hawaii. Report a pest.

5. "Protect Hawaii—The Silent Invasion of Hawaii's Reefs
Announcer: Hawaii's Reefs are home to a dazzling array of Marine Life. But in some areas, invasive alien seaweeds and snowflake coral are silently spreading, devastating the marine ecosystem. (But) there are ways you can help protect our reefs. Don't spread invasive seaweed. Clean your gear of all seaweed before moving to another spot…. And never dump your aquarium. Help protect Hawaii, because A living reef gives our islands life.

•The HISC Outreach staff has conducted additional outreach including the following:

Information booths at:
•Kauai Garden Fair (hundreds in attendance)
•Kawamura Farm Expo (Kauai; hundreds in attendance)
•Kokua Festival (Maui & Oahu)
•Malama I Ke Kai Ocean Festival (Oahu).
•Community display boards at Kauai Community College library for 4 months, and at Waimea and Princeville libraries

Presentations given:
•Garden Fair presentation to an audience of 40+ about horticultural invasive introductions
•Sierra Club Kauai Chapter, Executive Committee-15 people

•Hanalei Watershed Hui-10 people
•Ohana o Ka Aina-10 people
•Kauai Blue Water Campaign & Reef Check volunteers-30 people

Media:
•Kauai 97 FM radio interview on invasive species
•Garden Island article on invasive species and KISC
•Hawaii Public Radio (HPR) radio programming on coqui frogs, brown treesnakes and miconia (100,000 listeners statewide)
•Hawaii Public Radio (HPR) radio programming on invasive seaweed and snowflake coral (100,000 listeners statewide)
•KHON-2 (Fox Affiliate) television broadcast programming on coqui frogs: "Hawaii's Morning News" show, to discuss coqui frog control efforts.
•Voice of America (VOA) radio programming on coqui frogs and miconia (visit http://www.voanews.com/english/AmericanLife/2005-08-10-voa12.cfm)

Printed flyers and other materials are being developed for island-specific and statewide use. These include a new flyer on miconia, aquatic invasive species and coqui frogs.

Outreach Grants

Curriculum Research & Development Group, University of Hawaii - School Monitoring of Intertidal Invader - $6,630

Develop curriculum and activity package for educators to: 1) To increase monitoring of intertidal regions around Hawaii 2) To improve content and skills knowledge of high school students by involving them in authentic ongoing research linked to Hawaii State Content and Performance Standards for Science. 3) To increase public knowledge about the intertidal ecosystem in Hawaii and threats posed by invaders.

Dept of Health, Environmental Planning Office -"*Fight the Bite*" West Nile Virus Prevention Campaign - $10,000
Use radio PSAs, bus advertising, internet and informational materials to educate the public about West Nile Virus (WNV) prevention efforts and mosquito suppression techniques.

Project will increase public awareness, support, and participation for mosquito management and other WNV prevention efforts. Provide information about possible WNV impacts on health, wildlife and economy. Encourage participation from other government agencies besides DOH.

The Hawaii Land Restoration Institute - *The Palolo Invasive Species Swat Team (PISST) Phase I* $9,950
To increase community-based understanding of, commitment to and involvement in invasive species control and native habitat restoration projects for Palolo Valley, Oahu as a model for communities statewide.

Project will include students selection and training to participate in the Hawaii Youth Conservation Corps summer program and a series of presentations, events and field work days, including school and evening presentations, booths at the annual Palolo Pride celebration (August), community field days, and native plantings to restore microcosms of local habitat.

Landscape Industry Council of Hawaii - *LICH Green Industry Conference 2005 - $3,610*

The goal of the invasive species conference session is to raise awareness about specific invasive plants and animals, to garner reports of pests of concern, and to educate industry members about the large role they play in importing, promoting and spreading invasive plants in Hawaii.

This project will inform plant industry participants about invasive species to watch for in their industry, which may aid in reporting of new pests that are likely to be transported in nursery materials.

Leeward Community College (LCC) Educational Media Center - Invasive Species Information Series - $10,000

Hawaii LCC Educational Media Center Video Production Unit will produce a series of four (4) panel discussion type programs on invasive alien species issues.

Programs will be an hour in length, produced live, or live-to-tape, and feature a moderator and a panel of 3-4 subject experts. Possible channels of dissemination include but are not limited to ‘Olelo Channel 55 and other ‘Olelo channels.

Moanalua Gardens Foundation - MGF’s ‘Ōhi‘a Project Update—Invasive Species and Native Plants and Animals – $9,800

Update lessons on native and invasive species in the *Öhi’a Project* curriculum, the most widely used environmental education curricula in Hawaii.

The goal of the new curriculum will be to help students and teachers increase their knowledge of native and invasive species while meeting Department of Education science and social studies content and performance standards. To promote stewardship of the environment for grades 1–7 students through updated lessons.

North Kohala Community Resource Center & Kohala Coqui Coalition - $5,300

Goal of this effort is to eradicate all infestations of coqui frogs in North Kohala by mid-2005, control subsequent infestations with quick-response eradication teams, and prevent additional infestations with an aggressive community education program implemented throughout the year.

Outside Hawaii / Cal Hirai in partnership with Malama Hawaii - $9,735

Produce invasive species vignettes to be aired as part of weekly magazine show “Outside Hawaii”.

5 vignettes – 4-5 minutes each, aired as shorts or combined to make 2 half-hour shows. Each vignette will be aired at least four times on **prime time**, reaching a statewide weekly viewership of approximately 30,000 people.

Outside Hawaii" is a 30-minute weekly show that has two weekly primetime airings on the statewide Oceanic Time Warner Cable's Channel 16. In addition to the primetime airings OH has up to ten additional non-primetime weekly slots that are scattered over a number of time periods.

Office of Research Services, University of Hawaii, University of Hawaii at Manoa - Public Outreach via radio to Encourage Coqui Frog Reports - $10,000

The goal of this project is to stop the spread of coqui on Oahu and Kauai by using radio media to reach the public with a PSA that incorporates the coqui vocalization and the instructions to call the State Pest Hotline number to "Report a Pest". The reports will be followed up with verification phone calls and site visits and will allow project participants to control the population before it spreads.

Pacific Cooperative Studies Unit – UH Office of Research Services Environmental Education in East Maui - $10,000

The East Maui Watershed Partnership's (EMWP) Outreach Program was created to educate the community about the connection between East Maui's watershed and our island's source of fresh water and how invasive species threaten the health of our forested watershed. The EMWP Outreach Program includes classroom presentations, interpretive hikes and field studies, participation at community events and an annual art contest.

DLNR-DAR - AQUATIC INVASIVE SPECIES INFORMATIONAL BOOKLETS - $5,000

The goal of this project is to raise overall awareness of aquatic invasive species, as well as to focus on a number of these species that can be found in Hawai'i. This project will involve the publication of a Freshwater Aquatic Invasive Species informational booklet that will be distributed to sports fisherman, via public libraries and available on the internet.

Tri-Isle Resource Conservation and Development Council Inc. – Extinguishing the Fire Ant Through Education (Ho'ike o Haleakala) - $7,885

Establish environmental education curriculum, Ho'ike o Haleakala, to educate intermediate and high school students about the threats posed by invasive species introductions and the importance of early detection and prevention.

"Finding the Little Fire Ant (LFA)," is an existing activity in the Coastal Module of the Ho'ike o Haleakala Environmental Education curriculum. It enlists students in collecting and identifying ants as a tool for early detection of LFA. This activity will be expanded and ant identification keys modified to include Red Imported Fire Ant (RIFA). A selection of high priority survey areas (nurseries, ports of entry, construction sites,

landscaping areas, etc.) for LFA and RIFA on Maui will be identified and a sampling protocol established.

University of Hawaii - *Malama I Ka 'Aina, Issues with Invasive Species* –$10,000
The goal of the project is to develop/deliver standards-based curricular materials, including field-based lessons and activities that meet the needs of Hawaii's teachers. Materials will be disseminated in teacher education classes and workshops with the objectives of preparing teachers to address science standards as students: 1) Learn about invasive species; 2) Participate in invasive species control projects, 3) Promote and restore native species, and 4) Communicate the consequences of invasive species in their locale or ahupua'a.

Hawaii Invasive Species Council Project Match Summary

2004-2005 Match funding for the HISC program						
Match Distribution						
	State Wide	**Hawaii**	**Maui**	**Oahu**	**Kauai**	**Total by Program**
Prevention						$1,926,000
Department of Defense funded WS Brown Treesnake interdiction	$1,000,000					
Department of the Interior - Office of Insular Affairs Brown Tree Snake Prevention grant	$546,000					
Hawaii Coral Reef Inititive	$330,000					
Department of the Interior – United States Geological Survey data project	$50,000					
	State Wide	**Hawaii**	**Maui**	**Oahu**	**Kauai**	**Total by Program**
Response and Control						$1,486,500

USDA Consumer Credit Corporation Coqui frog proposed grant						
Department of the Interior Hawaii Invasive Species Projects	$68,000	$86,000	$64,000	$59,000	$59,000	
County of Maui - Support to MISC			$380,000			
USDA Forest Service Prevention and Suppression funding		$200,000	$150,000	$50,000	$100,000	
NOAA Coral Reef Management Grant	$30,000					
USFWS Nonindigenous Aquatic Nuisance Prevention and Control Act	$72,000					
NOAA Pacific Island Regional Office	$45,000					
USFWS Dingell Johnson Funds (DJ) - Weed control	$10,000					
USFWS - DJFreshwater Invasives	$58,500					
Coastal Zone Management Grant for Ballast Water Program	$55,000					
	State Wide	**Hawaii**	**Maui**	**Oahu**	**Kauai**	**Total by Program**
Research and Technology						$1,082,366

Research and Technology Project - Grantee Match	$1,082,366					
Public Outreach						$238,156
Outreach Projects - Grantee Match	$238,156					
Totals	$3,585,022	$286,000	$594,000	$109,000	$159,000	$4,733,022

In response to Section 19 of Act 178, Session Laws of Hawaii 2005:
Hawaii Invasive Species Council
Budget and Projects for the Fiscal Year (FY) 2005-2006

SUMMARY

Section 19 of Act 178, Session Laws of Hawaii (SLH) 2005, provided that the Department of Land and Natural Resources submit detailed reports each year that shall include but not be limited to the amount of expenditures, the amount of revenues, and the effectiveness of the Hawaii Invasive Species Program and shall include the complete report from the previous fiscal year; provided further that the reports shall be submitted to the Legislature no later than twenty days prior to the convening of the 2006 and 2007 regular sessions; provided further that the Department shall be assessed a fee of $10,000 for each business day beyond the date that the report is due; and provided further that the Director of the Department of Land and Natural Resources shall deposit all assessments to the General Fund. This report, in part, is intended to satisfy the 2006 reporting requirement.

The Administration's invasive species budget initiative calls for the expenditure of $4,000,000 in state funds over the next biennium to provide support for both the operations of the Hawaii Invasive Species Council (HISC) and its partnerships with federal, state, county, and private entities to develop and implement a comprehensive, state-wide invasive species program. The four HISC program areas (and their corresponding HISC working groups) are: 1) Prevention, 2) Response and Control (for established pests), 3) Research and Technology, and 4) Public Outreach. State dollars will be matched (1:1) by non-state dollars or equivalent in-kind services making this an overall effort of at least $8 million for Fiscal Year 2006. On August 18, 2005, HISC voted to approve the working group project budgets below. This report describes the projects of each working group, including cost details.

Act 178, SLH 2005, provided an additional $1,000,000 in general funds to support HISC bringing the total funding support for HISC to $2,000,000 in general funds and $2,000,000 in Natural Area Reserve special funds. HISC working groups are implementing the tasks in Act 85, SLH 2003, and the goals in the *Interim State of Hawaii Strategic Plan for Invasive Species Prevention, Control, Research and Public Outreach*.

HISC Budget Summary and Spending for Fiscal Years 2005 and 2006								
	FY 2006 Budget			FY 2005 Budget			*Interim Plan* Budget	
Working Groups	Approved	In Millions	% of HISC	In Millions	% of HISC	% Change in FY06	Working Group %	In Millions
Prevention Subtotal	**1,516,535**	**1.52**	**38%**	**1.34**	**34%**	**13%**	**35%**	**1.40**
DOA	755,000		19%					
DOH	455,135		11%					
USDA/APHIS/WS	186,000		5%					
DLNR	120,400		3%					
Established Pests Subtot.	**1,560,000**	**1.56**	**39%**	**1.70**	**43%**	**-8%**	**30%**	**1.20**
Aquatic Invasives (DLNR)	300,000		7%					
Inv. Species Committees	1,260,000		32%					
Res'ch & Tech. Subtot.	**675,000**	**0.68**	**17%**	**0.70**	**18%**	**-4%**	**30%**	**1.20**
Contracts (DLNR)	600,000		15%					
Administration (DLNR)	75,000		2%					
Public Outreach Subtotal	**248,465**	**0.25**	**6%**	**0.26**	**7%**	**-4%**	**5%**	**0.20**
Staff & Admin. (DLNR)	135,465		3%					
Outreach Projects (DLNR)	113,000		3%					
TOTAL	**4,000,000**	**4.00**	**100%**	**4.00**	**100%**	**0%**	**100%**	**4.00**

Prevention

Budget $1,516,535

Summary

The lead agency for the Prevention Working Group (PWG) is the Hawaii Department of Agriculture (DOA). The PWG met on August 8 and 22, 2005, and discussed the status of prevention efforts in Hawaii, reviewed the status of the projects funded in FY 2005, reviewed the proposed PWG task list, and developed and recommended a budget and seven projects for FY 2006. These projects will be accomplished through a transfer of $650,000 from the Hawaii Department of Land and Natural Resources (DLNR) to DOA and $455,135 to the Hawaii Department of Health (DOH) in the second quarter of the FY 2006. The remaining funds will be encumbered both with a cooperative service agreement between the DLNR and the United States Department of Agriculture's Wildlife Services (WS), and directly by DLNR, Division of Forestry and Wildlife

(DOFAW). The funds will be obligated from the following sources: $616,535 from G-042 and $900,000 from S-314.

Prevention Working Group Budget Summary		
	Total	$1,516,535
Source	General Fund 042	616,535
	Special Fund 314	900,000
Partner Agency	**Project**	**Cost**
DOA	1. Expand Risk Assessments	350,000
	2. Eight Research Technicians	105,000
	3. Expand INVICTA Database	300,000
	DOA Subtotal	755,000
DOH	4. West Nile Virus Prevention	455,135
USDA/APHIS/WS	5. Brown Treesnake Certification	
	Four Inspectors	154,000
	Vehicle Use	16,000
	Equipment & Supplies	16,000
	USDA Subtotal	186,000
DLNR	6. Invasive Species Strategy Specialist	75,200
	7. Weed Risk Assessment Technician	45,200
	DLNR Subtotal	120,400

The first three projects, managed by DOA, will:
1. Continue and expand port risk assessments throughout the State,
2. Contract research technicians to increase the efficiency of the inspection process during the port risk assessments, and
3. Expand the INVICTA database and other tracking tools for use state-wide.

The fourth project, managed by DOH, will develop the capacity of the Department to prevent the establishment of West Nile Virus (WNV) by providing supplies for the Vector Control Branch and increasing the response capacity of the state laboratory.

The fifth project, contracted to USDA/APHIS/WS, will continue and expand upon a study of the feasibility of having all outbound civilian cargo departing Guam and arriving in Hawaii certified as having been inspected for brown treesnakes.

The sixth and seventh projects, managed by DLNR, will:
6. Contract an invasive species strategy specialist to both reduce the risk of species such as the red imported fire ant establishing in Hawaii and to prevent the interisland spread of the little fire ant, and
7. Contract a technician to use the locally-developed weed risk assessment as a tool to screen plants grown and used commercially in Hawaii.

DOA Prevention Projects

1. Expand Risk Assessments **$350,000**

DOA will collect data in state-wide risk assessments to determine the modes of entry of invasive species into the state and the relative risks of these different modes. These data will allow the Plant Quarantine Branch to more effectively utilize its limited resources by prioritizing inspection activities. In addition, the information will be essential for the state to assess where it needs to address gaps in its prevention efforts by focusing additional resources to fill these gaps.

Kahului Airport Risk Assessments average $50,000 per run. Expenditures include air transportation, per diem, mileage, parking, hotel excess lodging, night differential, and overtime/travel time costs. Although we will be incorporating research technicians to assist the inspectors, they cannot replace the inspectors in the inspection and disposition of agricultural commodities. Senior inspectors will need to travel to various ports in order for the risk assessments to be conducted consistently. Risk assessments will focus on inspection of areas not performed during the Kahului Airport Risk Assessments and FY05 Oahu Risk Assessment. FY06 risk assessments will focus on FedEx and other freight forwarders, maritime, and foreign goods from the Pacific and Asia.

2. Contract Research Technicians **$105,000**

Because of the delay in funding, we were not able to contract the research technicians in FY05. Research technicians will prepare inspected goods for preliminary identification of pest species. They will also collect data for our risk assessments in addition to data from daily operations.

3. Expand INVICTA Database **$300,000**

DOA will expand its database system to a state-wide interception and permit database. In Phase I, INVICTA was developed only for Kahului Airport using Department of Transportation (DOT) and Federal Aviation Administration (FAA) funds specifically designated for Kahului Airport. The INVICTA database has been in development and used for approximately two years by DOA's Maui inspectors, with the ultimate goal of being used as a state-wide system. The database has proven to be useful in managing interception data and permits, as well as for reporting capabilities. Phase II of INVICTA began in January 2005 for Kahului Airport. This version will create a more efficient user interface and a more comprehensive online summary and links for the inspectors and specialists on the organisms intercepted at the ports-of-entry.

The current INVICTA database will need to be expanded to accommodate collection of data for all ports. As part of the Department's strategic plan, this integrated database system will be used in conjunction with the implementation of the quality control program to assess risk of entry of invasive species, evaluate invasive species interdiction techniques, and prioritize activities. To support risk assessments for other airports and

maritime activities, INVICTA will be updated through software implementation and hardware acquisition. Inspectors will be trained in data entry and software use, data collection, data analysis, data entry and reporting, and allocation of resources to ensure the collection of data during the state-wide risk assessments and completion of reports.

DOH Prevention Project

4. West Nile Virus Prevention $455,135

The DOH will maintain and improve its current surveillance and prevention efforts, and establish greater capacity for responding if WNV is detected, in order to prevent the establishment of the Virus in the State. As WNV activity intensifies in California and across the Mainland, it is increasing likely that an infected mosquito or bird will make its way onto an airplane or ship, and thus introducing the Virus to Hawaii.

DOH will continue to invest heavily in WNV fight through staff time. Based on staff time, state-wide, DOH spends about $832,000 on mosquito control generally, plus about $1,000,000 on port of entry work specifically targeting WNV. DOH also spends about money for staff time in its laboratories state wide.

DOH needs HISC funds because the Centers for Disease Control (CDC) only will provide level grant funding and rejected DOH's request for increased grant funds. CDC is even phasing out personnel allocations. Furthermore, DOH will have fewer vacancy savings to support WNV efforts and so actually faces reduced financing in FY06. DOH ran short of lab funds at the end of FY05 and had to obtain help from US Fish and Wildlife Service and the HISC.

WNV poses a serious threat to Hawaii for several reasons. Given the tropical climate of the State, mosquito populations are present throughout the seasons, suggesting the potential for year-round transmission and prolonged human disease outbreak. Direct medical costs will be significant. With regards to wildlife, WNV will probably extinguish several endangered and endemic bird species in Hawaii, and may cause irreversible damage to the ecosystem. Additionally, Hawaii's economy is dependent on tourism, and its beautiful and safe environment is attractive to many visitors. Establishment of a mosquito-borne disease with no cure or prophylaxis currently available would have a negative impact on the state's economy.

DOH has and will continue to focus its efforts on the following areas:

1. Prevention activities continue to focus on source reduction, and source treatment with larvicides. Hawaii's mosquito species are container breeders, so reducing the number of water-collecting items from property reduces the breeding sites for the mosquitoes. Public outreach is critical for source reduction, and is discussed below. In addition, treatment of standing water with larvicides greatly enhances the reduction of the adult mosquito population, especially because standing water cannot be eliminated in many

areas. Mosquito suppression is targeted so that if the Virus is introduced, there will not be a sufficient mosquito population to establish the disease cycle.

2. Educating the public is another significant activity for prevention of WNV. DOH shared WNV information through various venues, including health fairs, pet shows, neighborhood boards, association and group meetings, and the main public library. Other outreach activities included radio public service announcements, production and dissemination of informational brochures. Outreach efforts will continue with the emphasis on informing the public of the need for mosquito control and next, on help with reporting and collecting dead birds.

3. Source reduction for prevention. The DOH - Vector Control program adopted a goal of reducing mosquito populations to a level of no more than five mosquitoes per trap per night, with surveying for breeding sites triggered by higher counts. Maintaining low mosquito counts has proven more difficult in some areas than others. In April and May 2004, staff surveyed a radius of approximately two miles of all major ports of entry, to detect and reduce breeding sites. Ports of entry, both air and sea, will continue to be the primary focus of DOH mosquito surveillance and reduction.

4. Bird surveillance greatly improved this past year. A contract was established with Aloha United Way to operate a public hotline, accessible state-wide, to report dead birds. The number of dead bird collection sites also increased. Birds collected were tested by RAMP (Rapid Analyte Measurement Platform) WNV Test, which is a rapid antigen detection assay. This is treated as a screening test, providing more rapid results. DOH also has developed the capability to conduct live bird testing.

5. Lab testing. The ability to detect WNV in a timely manner is critical in preventing the establishment of WNV or, if it is established, minimizing the public health impact in humans and animal species. Due to our relative remoteness, efforts have been made to ensure that a full menu of WNV testing is available within the state. Protocols for performing enzyme-linked immunosorbent assays (ELISA) for WNV antibody in humans were established at the State Laboratory Division (SLD), and will continue to be used for the diagnosis of WNV human infections. The SLD will continue to perform Real Time - PCR (RT-PCR) tests for the detection of WNV nucleic acid in human cerebral spinal fluid specimens, dead bird organs, and mosquito pools. SLD is asking for $64,870 for Real Time RT-PCR kits and ancillary supplies to maintain testing of dead bird tissue and mosquito pools for WNV nucleic acid at the 2005 level.

6. Data management, including geographic information systems, is critical to prevention, surveillance, and response. Significant improvements in this area will also allow for quicker recognition of trends and better ability to respond to field conditions and will continue to ensure integrity of the data being entered. Such surveillance data will guide prevention and suppression efforts. Currently, most of our information technology equipment is on Oahu and we seek to provide our neighbor island staff with equipment. Furthermore, equipment and software must be maintained after purchase, and training will be needed so staff can use the full capability of the GIS software.

7. Response. In order for Hawaii to remain WNV-free, it is critical that DOH be able to respond immediately and intensely to surveillance indicators that WNV has entered the state. If WNV were to be detected, current larviciding procedures would not be adequate for halting the disease transmission cycle. Subject to further review and approval, adulticide, applied by backpack and truck sprayers, would be employed to prevent the establishment of the virus. Equipment and adulticide needs to be in state, so that application can take place before further transmission and amplification.

WS Prevention Project

5. Brown Treesnake Certification $186,000

USDA/APHIS/WS will continue with the feasibility and logistic requirements for implementing a brown treesnake inspection certification program aimed at military and commercial cargo exports from Guam. The current project is focused primarily on the cargo processes themselves, not the destination of outbound cargo. During FY06, WS will refocus the certification process to Hawaii bound cargo only.

To accomplish this work, WS will commit four full-time canine handlers to providing inspection services and certification paperwork in support of surface cargo transportation, focusing upon cargo destined for Hawaii. In addition, Wildlife Services will provide the administrative and biological oversight necessary to continue this project.

Wildlife Services will identify commercial cargo consolidators and military organizations that regularly containerize cargo destined for Hawaii. Container contents will be inspected prior to consolidation, and upon application of a customs seal, WS will provide a stamp on the container manifest documenting the inspection process. Manifest records (inspections) will be provided to DOA representatives for verification upon cargo arrival in Hawaii.

The four WS inspectors will work to identify the point in the consolidation process where maximum inspection activity can be achieved, while still verifying contents of each container have been entirely inspected. Work will initially focus upon daytime activity, but may transition to night-time inspections if cargo operations require such activity.

DLNR Prevention Projects

6. Invasive Species Strategy Specialist $75,200

The Invasive Species Strategy Specialist will facilitate more effective protection of Hawaii's environment from harmful alien species by gathering background information and facilitating coordination, organization, prioritization, and implementation of measures to prevent the introduction of alien pests into Hawaii, with special emphasis on prevention of establishment and interisland spread of the little fire ant (*Wasmannia*

auropunctata) and the red imported fire ant (*Solenopsis invicta*). The specialist accomplishes this by assisting federal and state agencies to implement more effective protection measures from non-native pest organisms, including identification of alien species pathways of entry into Hawaii, developing management plans and educational material, technical writing, organizing meetings, and other support work as necessary to fulfill program objectives. The specialist will supervise and train field personnel in collection of entomological field data, conduct data analyses, and prepares research papers and reports for publication in professional journals and dissemination to interested parties. This is a one-year position, subject to renewal based on performance and available funding.

7. Weed Risk Assessment Technician $45,200

The Weed Risk Assessment (WRA) system is a tool that uses published scientific information to gauge the potential of a plant to be invasive if planted in Hawaii. The system is designed to identify plants that are invasive in natural areas such as forests, cultivated lands including forestry and agricultural areas, and invasive plants in other managed areas, e.g. parks and lawns. The WRA system provides biological information only. Funding would be to continue screening plants to allow the development of the WRA as a systematic tool that will be used to prevent the importation of potentially invasive plants and provide information about plants present in Hawaii that could become weeds over time.

The WRA system has three important goals:
1) Screen new plant introductions to identify species that pose a high risk of causing ecological or economic harm if they are imported.
2) Identify high-risk species among plants that have already been imported, allowing for informed planting decisions.
3) Assist with prioritizing species for active control programs among more than one thousand plant species that have become naturalized in Hawaii.

The WRA system consists of 49 questions about a plant's biological characteristics and whether it has become invasive in other locations with similar conditions to Hawaii. The technician will use published information from credible scientific sources to answer these questions, which gives the plant a total numerical score. At this time there is a backlog of plants for which screening has been requested by nursery or landscape industry representatives.

Response and Control

Budget $1,560,000

The funds of this working group are used for conducting invasive species detection, response, and control actions on the ground.

The Established Pests Working Group (EWG) met on July 8, 2005 to review projects funded in FY 2005, and to review efforts to control established pests by the DOA, DOH, and DLNR, and to review the proposed EWG task list, review the list of invasive species generated by HISC, and discuss invasive species control programs. The lead agency for the EWG is DLNR.

The work of the Island Invasive Species Committees on priority pests (economic, agricultural, and environmental) in each county will be supported along with the continuation of a pilot marine response program being developed by DLNR in cooperation with federal, private and county resources. The funds will be obligated from the following sources: $1,260,000 from G-042 and $300,000 from S-314.

While supporting the existing invasive species committee partnerships and the new marine invasive species response team are priorities there was discussion on how to make sure the work done by the partnerships was evaluated by including long term monitoring for efficacy, that new species were being detected effectively and that participation by all agencies concerned was encouraged. The EWG will continue to address these issues as well as evaluate additional species for inclusion on the HISC list of invasive species and coordinate response and policy efforts for priority species.

Established Pests Working Group Budget Summary		
	Total	$1,560,000
Source	General Fund 042	1,260,000
	Special Fund 314	300,000
Partner		**Cost**
1. Big Island Invasive Species Committee (BIISC)		$403,200
2. Kauai Invasive Species Committee (KISC)		$277,200
3. Maui Invasive Species Committee (MISC)		$302,400
4. Oahu Invasive Species Committee (OISC)		$277,200
5. Aquatic Invasive Species Team (DLNR)		$300,000

Research and Technology

Budget **$675,000**

This working group advertises a request for proposals for critical projects such as biological control, more effective increased survey and detection efforts, taxonomic identification, master geographical information system and associated database management, and applied technology for improved efficiencies in invasive species prevention and control efforts.

Timely information about invasive species is a necessary component of successfully carrying out this program. With the University of Hawaii's leadership a working group to

oversee the grant program will review the request for proposals and ensure that a diverse array of grants are received and consistently and fairly reviewed. The request for research and technology proposals focusing on invasive species will be sent out in September 2005. Applicants will be asked to identify new matching funds for their proposed projects and grantees will be asked to report on their results to HISC. The $675,000 for research contracts along with the salary and support funds for HISC administration will be distributed from the S-314 account. The request for proposals and proposal review will be developed and overseen by agency staff and other HISC participants, including representatives of key federal and private agencies.

Research & Technology Working Group Budget Summary		
	Total	$675,000
Special Fund 314	In the 3rd Quarter FY06	275,000
	In the 4th Quarter FY06	400,000
DLNR Project		**Cost**
HISC Administrative Support		$75,000
Research & Technology Contracts		$600,000

Public Outreach

Budget **$248,465**

This working group cooperates with the public and private sectors to increase voluntary compliance of quarantine laws, avoid accidental introductions of invasive species. It is also establishing an effective pest hotline that delivers timely information to managers on the ground. The lead agency for the working group is DOH.

The working group identified priority messages for key species and outreach needs to be addressed in the coming year including: West Nile Virus, coqui frogs, aquatic issues, weed risk assessment, port of entry worker outreach, transport of pests (into the state, between islands, around islands), and the red imported fire ant.

Three outreach specialists are stationed throughout the State (Big Island, Oahu, and Kauai). They are supervised by the Invasive Species Committees or other sponsoring agency and are responsible for carrying out a quarterly work plan determined by the participants in the Public Outreach Working Group.

The Outreach Specialists will use the funds to support outreach on priority species and messages including West Nile Virus and the Coordinating Group on Alien Pest Species (CGAPS) “Don’t pack a pest, Don’t plant a pest, and Report a Pest” public service announcements. The group also decided to support the development of a website for HISC that would be integrated with existing online resources.

The Public Outreach Grant Program will again advertise a request for proposals for invasive species outreach projects. This program makes money available to public, community, and private entities who would like to do invasive species outreach and education.

The Public Outreach working group would also like to point out that outreach is an often under-utilized part of the invasive species programs. While the working group hopes to increase understanding and visibility of the issue in the coming year, devoting more than 7% of the total budget to the effort in future requests would be helpful.

Public Outreach Working Group Budget Summary		
	Total	$248,465
Partner	**Project**	**Cost**
CGAPS	Outreach Specialist	135,465
BIISC	Outreach Specialist	
KISC	Outreach Specialist	
DLNR	Outreach Projects, Grants, & Support	113,000

Attachment 1

DOA FY 2005 Prevention Projects report

Maritime Study:

Purpose: To assess the pest risk on imported goods shipped via maritime vessels.

- Collect information from shipping companies to describe the maritime pathway.

Status: Worked with Hawaii Farm Bureau to get statutory changes that authorize the mandatory manifesting of agricultural commodities, which will enable the department to prioritize inspection based on risk.

- Determine if shipping companies' database can be linked into our database to allow us to better allocate staffing resources.

Status: Met with Matson and Horizon Lines to discuss pathways and use of their database. The focus will be to tap into their database for high risk pathways for Red Imported Fire Ant (RIFA). Rather than imposing a protocol on everything, we will be focusing on the risk associated with soil, media, and hay from domestic RIFA regulated areas. As the DRC contract was finalized last week, HDOA staff will proceed with discussions with the two transportation lines.

Purpose: To perform a risk assessment on a specific pest, Solenopis invicta (RIFA).

- Collect information to determine the quantity and type of goods coming into Hawaii from RIFA infested areas.
  Status: This information will be part of the shipping companies' databases.
- Research RIFA treatments that could be used in shipping containers in lieu of 100% inspection and instead monitored under a Quality Control program.

Status: Met with Ann Marie Calcott and other USDA RIFA researchers to discuss the status of quarantine treatment research. Research has focused on media. Limited research on hay. Some new materials will be available in the future. These discussions will continue.

- Assess control and eradication programs of other countries to develop rapid response program for Hawaii.

Status: Met with Australian, Taiwan, and contacted New Zealand RIFA control and quarantine personnel. In October, we will be going to Australia and New Zealand to look at their quarantine programs focusing on maritime operations and RIFA efforts. In November, HDOA staff will be going to Taiwan. Taiwan is currently working on both eradication and control programs for RIFA.

- Merge applied RIFA research with practical applications to recommend mitigation measures.

Status: Implement RIFA strategy on LFA to improve rapid response capabilities.

Risk Assessments:

Purpose: To collect data on pests on agricultural commodities shipped via air freight similar to Kahului Airport Risk Assessment with emphasis on cut flowers and propagative plant materials.

Status: From March to June 30, 2005, HDOA staff accumulated 54 days of collection data. During the first several assessments, the inspection focused on live plants, propagative plant parts, and cut flowers. In the later periods, the inspection of produce was included.

Preliminary findings March 20-June 4, 2005 (not all data included):

- Over 30,000 parcels were inspected
- 266 Insect Interceptions, 38 NKO, most from domestic origins
- 124 Disease Interceptions, 43 NKO, most from foreign origins
- 540 parcels Refused Entry or Treated/Destroyed

Nursery Pest Movement Study:

Purpose: To assess the pest risk of pests moving between islands.

- Describe the interisland pathway of serious agricultural pests, i.e. coqui, nettle caterpillar, and little fire ant (LFA).

Status: Coqui surveys have been completed for the certified nurseries on the Big Island, Maui and Kauai. Oahu will begin soon. HDOA has hired an additional entomologist to aid in ant identification for quicker survey results.

- Research treatments that could be used in shipping nursery products interisland.

Status: Contracted Wildlife Services for research on additional pesticides for coqui control.

- Merge applied research with practical applications to recommend mitigation measures.

Status: Developing thermal treatment facilities for use at our quarantine facilities to treat plants from coqui infested areas moving to uninfested areas.

- Link with federal and state agencies, Plant Pest Control, private sectors, etc. to address the interisland pathway of pests.

Status: Implementing eradication procedures for coqui infested nurseries on Oahu and developing program to eradicate coqui on Oahu and Kauai. Both projects are in conjunction with other federal and state agencies, PPC, and private sector groups.

- Analyze current regulatory system and develop recommendations.

Status: Implement coqui protocol when survey and thermal treatment facilities are completed.

RCUH Hires:

Purpose: To provide additional staffing resources for Plant Quarantine operations.

- Assist in the collection of information for the various HISC projects.
- Determine if research technicians can be used to better allocate limited inspector staffing and in augmenting Plant Quarantine services.

Status: Job recruitment was approved and listed by UH Cooperative Extension. Thus far, there have been no applicants.

Inspection Results from March to June 4, 2005. Because the data and identification have not been completed, the data presented is incomplete.

COMPARISON OF OAHU RISK ASSESSMENT (ORA), HONOLULU INTERNATIONAL AIRPORT (HNL) AND KAHULUI AIRPORT (OGG) INSPECTION DATA

	ORA[1]	HNL Normal Inspection	OGG Normal Inspection[2]
Number of Parcels inspected	31,231[3]	391,823 (1,655,781)[4]	6,304
Man hours			
Number of Interceptions	390	na (106)[5]	174
Number Insect Interceptions	266	na	na
Number of NKO Insects Interceptions	38	na (24)[6]	53
Number of Disease Interceptions	124	na	na
Number of NKO Disease Interceptions	43	na (24)[6]	32
Number of parcels Refused Entry or Treated and Destroyed	540	1056 (1189)[4]	259

1. Not all of the data for the first four inspection periods are complete and the emphasis was mainly on cut flowers. Inspection was performed during the evening hours to not disrupt normal operations. Note: na – data not available at this time.
2. Data incomplete. Includes passenger, baggage and cargo inspections.
3. ORA inspection of cut flowers, plants and produce (limited) for evening hours only. This included 237 tons (474,706 pounds) of produce.
4. Total number of parcels for cut flowers, plants and produce. Number in parenthesis is the total number of parcels for all of HNL's inspections including ROT, interisland, foreign, mail, baggage and passengers for March and April 2005.
5. Total number of interceptions for all of HNL inspections.
6. Total number of NKO, including insects and disease.

Inspection Results from March to June 4, 2005. Because the data and identification have not been completed, the data presented is incomplete.

ORIGINATION POINTS OF NKO SPECIMENS

Origination Point	Number Of Parcels	Number of Disease Interceptions		Number of Insects Interceptions	
	TOTAL	TOTAL	NKO	TOTAL	NKO
International					
Colombia		41	17	19	3
Ecuador		22	7	26	4
Mexico		7	0	13	2
Costa Rica		6	5	8	1
Guatemala		1	0	1	0
Puerto Rico		0	0	1	0
Taiwan		1	0	1	0
Domestic					
California		27	7	114	17
Florida		20	4	31	7
Pennsylvania		1	0	3	1
Utah		0	0	4	2
Oregon		0	0	6	0
Washington		3	0	1	0
OTHER		3	3	1	1

1. Data is incomplete for the period.
2. Other are those is unknown origins, such as commodities repacked.

Attachment 2

USDA APHIS Wildlife Services FY 2005 Prevention Projects report

WILDLIFE SERVICES BROWN TREESNAKE INSPECTION AND CERTIFICATION PILOT PROJECT FOR SURFACE CARGO EXITING GUAM

Prepared by:

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United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services

August 2, 2005

INTRODUCTION

With funding from the State of Hawaii, Wildlife Services (WS) initiated a brown treesnake inspection and certification pilot project for surface cargo exiting Guam. The goal of this pilot project is to establish the time and effort necessary to have canine detector dog teams inspect, certify and seal containers that have been inspected for brown treesnakes. The pilot project began on 03 January 2005, and the first two weeks were devoted to the development and refinement of the electronic log forms and physical inspection protocols, to optimize data collection and streamline time use. There are two full time canine positions devoted to the project and four cargo warehouses. Three of the warehouses are privately owned and operated, and one is on the Main Navy Base, COMNAVMARIANAS. These warehouses are primarily devoted to surface cargo, with goods being shipped to, but not restricted to, Hawaii.

For the first year of this project, WS is conducting an examination of the effort expended and the time required to inspect and certify all outbound cargo from these four cooperative warehouses. The cargo will be inspected for the presence of brown treesnakes and subsequently sealed after inspection to prevent the accidental intrusion of brown treesnakes. The respective warehouses stage the outbound cargo in an agreed upon area where the canine handler will visually inspect the cargo, the canine detector dog will sniff the cargo, and then the handler will observe the contents being loaded into the container where it will then be sealed. Wildlife Services is in contact with various vendors, but recipient locations such as Hawaii and the Commonwealth of the Northern Mariana Islands must provide input to determine the style and type of seal incorporated should cargo certification become mandatory.

METHODS

An electronic log and container certification spreadsheet was developed to record the amount of time spent at each task and track inspected containers. The procedures followed to complete these forms can be found in Appendix A. The electronic log is used to track the number of minutes spent conducting eight different tasks: dog and

kennel maintenance, vehicle maintenance, administrative duties, travel, training, certification project inspection, certification project observation, and non-certification project inspections. An additional spreadsheet is used to record the container number, seal number, vessel, estimated departure time, estimated arrival time, destination, and the type of cargo being loaded at each warehouse. The canine handler transfers this data from their field diary to a computer spreadsheet on a weekly basis.

RESULTS

The duties of the canine handler were divided into five major categories (Figure 1). Maintenance and administrative duties comprised 37% (179 minutes) of a handler's day, followed by certification inspections (139 minutes), non-certification inspections (86 minutes), travel (48 minutes), and training (29 minutes).

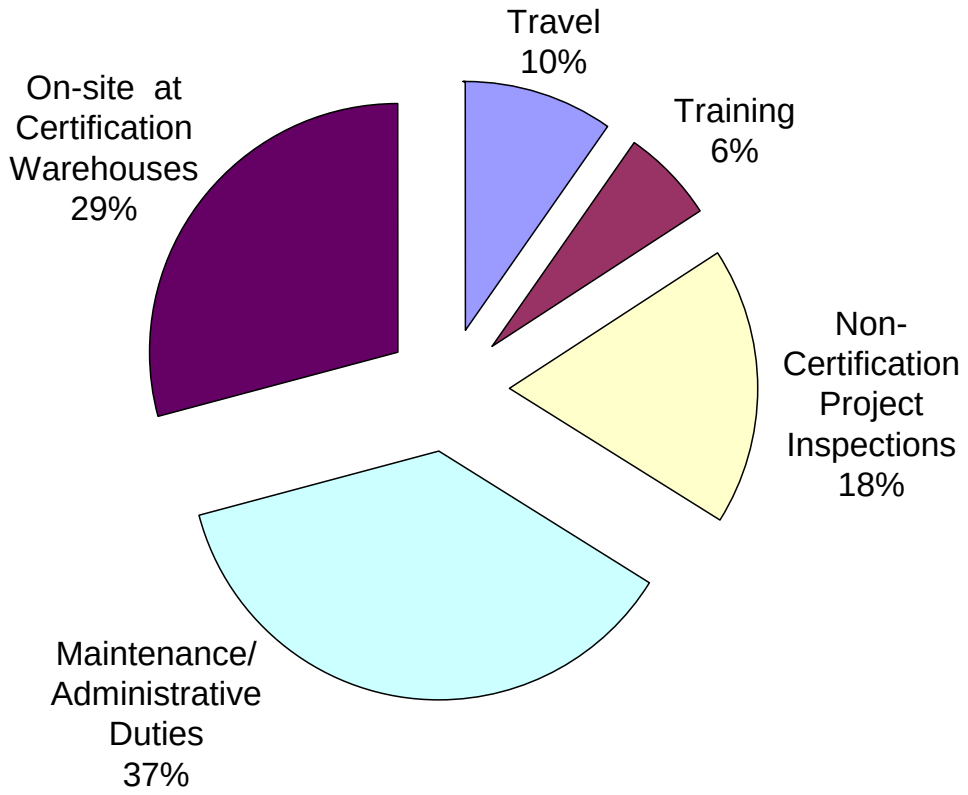

Figure 1: **Five major categories and average percent of time expended per day for the cargo certification pilot project between January and June, 2005.**

The time spent on-site at certification warehouses is divided into two sub-categories: Inspection and observation. The first 6-months of data show that for every 1 minute of inspection, there were 3 minutes spent observing the loading process. During a typical day, 7% (34 minutes) is spent conducting brown treesnake inspections and 22% (106 minutes) observing the loading process (Figure 2).

Maintenance and administrative duties is divided into three sub-categories: Dog and kennel maintenance, vehicle maintenance, and administrative duties. The data for time spent on dog/kennel maintenance and administrative duties is nearly identical. During a typical day, 17% (81 minutes) is spent taking care of the dog and the kennel, 2% (10 minutes) on vehicle maintenance, and 18% (86 minutes) completing administrative duties (Figure 2).

Data collected from the manifest of each container is not summarized here. An example of the Container Certification spreadsheet is provided in Attachment C.

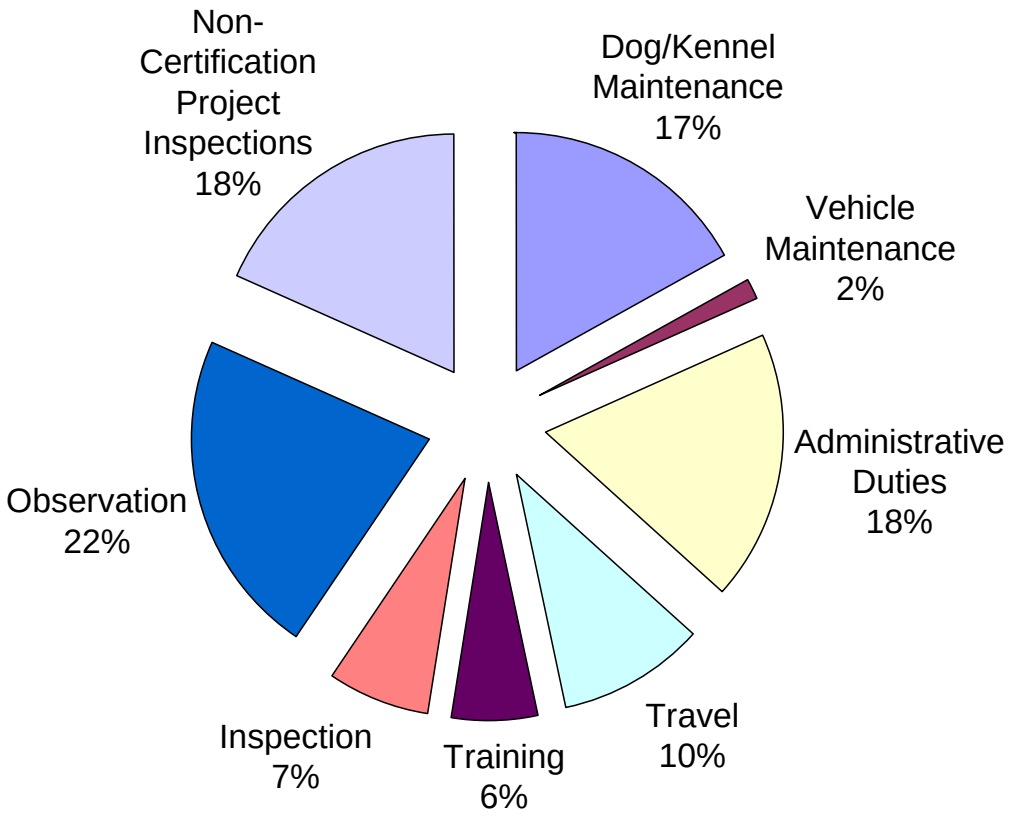

Figure 2: **The eight tasks conducted by handlers and the average percent of time expended per day for the cargo certification pilot project between January and June, 2005.**

DISCUSSION

The preliminary results from this project indicate a true certification process will require a substantial amount of staffing to meet all export cargo requirements. We are exploring alternative means to achieve certification of cargo, but to date, have not identified a more efficient process that validates container contents as inspected.

The amount of time spent at each certification warehouse varied greatly from one warehouse to the next, with the ratio of inspection to observation time varying anywhere

from 1:1 to as high as 1:10. The time costs associated with observation constitute a substantial part of the total manpower committed to the pilot project. WS staff have worked with each warehouse to identify means of reducing this down time, but the nature of commercial consolidation processes create frequent and unforeseeable delays in finalizing the packing process. To accommodate warehouses receiving booked cargo late or outside of normal business hours, nearly 150 overtime hours have already been committed to this project.

Non-certification project inspections comprised approximately 18% (86 minutes) of a handler's day. With this in mind, one additional warehouse could be added to this project without an additional increase in manpower. However, many commercial consolidation companies load on the same days of the week (to meet vessel departures), leaving other business days without any consolidation activity.

There are several alternative directions this project could take in subsequent years, which are summarized below:

1) Maintain project status quo, with one added warehouse and static staffing (with a 4% cost increase). We don't believe this option provides any long or short term benefit, as it simply continues on with gathering data similar to the current project.

2) Refocus the certification process to Hawaii-bound surface cargo only. This would require two additional canine handlers, as we anticipate the process would become further constrained by travel, timing of consolidation, and other logistic issues. Currently, we are focusing on the process, not the destination, for consolidation of export cargo.

3) Add aviation traffic, including cargo, to the process. This would require at least two added canine handler, as operations at the commercial airport and Andersen Air Force Base function 7 days per week.

4) Change the location where inspections are conducted from the commercial consolidation company to the commercial port. This would involve identifying the containers of interest, having them unpacked at the commercial port and inspected on site, then repacking the container and applying a seal. This would potentially result in huge costs to consolidators and the State of Hawaii, but would ease the logistic challenges of certifying cargo at 40 or more locations around the island. Creating a consolidation bottleneck could have several benefits, including the potential for creating a location to fumigate containers, and therefore warrants consideration.

We are recommending the State of Hawaii refocus the project on identifying, inspecting, and certifying surface cargo for Hawaii only. Given the limited alternative methods for conducting the certification process, we feel this is the logical next step.

Attachment 3

DLNR-DAR FY 2005 Prevention Projects report

Report
Division of Aquatic Resources
Department of Land and Natural Resources

SUMMARY

In September 2004, the Division of Aquatic Resources (DAR) proposed three prevention projects to the Prevention Working Group of the Hawaii Invasive Species Council. The overall goals for the prevention projects were to minimize the introduction of alien aquatic organisms from ballast water and hull fouling by establishing communication links between the DAR and other agencies, and informing the shipping industry of the proposed administrative rules for ballast water. The three prevention projects were 1) establish a three-agency communication link between the DAR and both the Department of Land and Natural Resources Division of Boating and Ocean Recreation (DOBOR) and the Hawaii Department of Transportation-Harbors Division (DOT-HAR), 2) establish a communication link with the National Ballast Water Information Clearinghouse (NBIC), and 3) to develop and distribute outreach materials to the shipping industry.

For the communication linking projects, the DAR was granted limited access to the vessel arrival information by the DOT-HAR. The DAR established discussions with both the DOBOR and the DOT-HAR on the issue of ballast water and hull fouling introductions and to improve communication in the future. Also, the DAR purchased the necessary equipment (fax machine and computers) to receive and manage the ballast water reporting forms. The DAR was able to establish a working relationship with the NBIC. The DAR also developed 4 educational handouts for the shipping industry on: 1) ballast water and hull fouling; 2) administrative rules for ballast water that the DAR is proposing; 3) snowflake coral (*Carijoa riisei*); and 4) Atlantic barnacle (*Chthamalus proteus*). The handouts are currently being disseminated by the DAR to the shipping industry.

Some of the projected outcomes did not occur and must be worked on further to be accomplished. The DAR was not granted full access to the DOT-HAR Comprehensive Information Database System (CIDS), because it contains confidential information that was inappropriate for the DAR to access. The DAR did not establish an electronic link between the DAR and the DOBOR because the DOBOR currently does not have a pre-arrival notification system for recreational vessels. The NBIC did not select the DAR to participate in the pilot project, possibly because the DAR did not have a mandatory ballast water reporting requirement in place at the time of selection.

After working on these prevention projects, it is apparent that better communication and collaboration between agencies is needed to minimize the introduction of alien aquatic organisms from ballast water and hull fouling.

INTRODUCTION

In 2000, the State Legislature enacted legislation as Act 134 that mandated the Hawaii Department of Land and Natural Resources (DLNR) as the lead agency for preventing the introductions and carrying out the eradication of alien aquatic organisms through the regulation of ballast water discharge and hull fouling. It also gave the DLNR the authority to 1) Re-establish an interagency task force, that was abolished in 1998, to address concerns relating to alien aquatic organisms, and 2) Adopt administrative rules, including penalties, to carry out the intent of this law.

One of the goals was to re-establish the interagency task force. In 1997, representatives from state and federal agencies, the scientific community, non-governmental organizations, and the shipping industry were assembled by the DLNR to develop suggestions for the State Legislature on ways to prevent the introduction of alien aquatic organisms into Hawaii from ballast water and hull fouling. This group was called the Alien Aquatic Organism Task Force (AAOTF). In 1998, after making their recommendations to the State Legislature in a report submitted by the DLNR, the AAOTF was abolished. In August 2002, the re-established AAOTF was assembled with 25 representatives from the same agencies and organizations as in 1997.

The AAOTF held numerous meetings to discuss the many issues related to ballast water management. The DLNR, with the assistance of the AAOTF, developed draft administrative rules by June 2003 using the United States Coast Guard's (USCG) voluntary ballast water management program and other State's ballast water management programs as templates. In July 2004, the USCG's proposal for mandatory ballast water management regulations became law. In response, the AAOTF met to discuss changes to the draft administrative rules to mirror the Federal regulations. The AAOTF supported the changes and the administrative rules are currently in the rulemaking process.

In September 2004, DAR proposed three prevention projects to the Prevention Working Group of the Hawaii Invasive Species Council, two communication linking projects and an outreach project. The overall goals for the prevention projects were to minimize the introduction of alien aquatic organisms from ballast water and hull fouling by establishing communication links between the DAR and other agencies, and informing the shipping industry of the proposed administrative rules for ballast water.

PREVENTION PROJECTS

The three prevention projects were 1) Establish a three agency communication link between the DAR and both the DOBOR and DOT-HAR, 2) Establish a communication link with the National Ballast water Information Clearinghouse (NBIC), and 3) Develop and distribute outreach materials to the shipping industry.

Three-Agency Electronic Communication Link

In this communication link, the DAR proposed to link with both the DOBOR and the DOT-HAR. The DOBOR is the agency that gathers the arrival information for oversea recreational vessels (sailboats, yachts, etc.) and the DOT-HAR collects the arrival information for oversea commercial vessels (containerships, tankers, cruise ships, etc.) on a database called the Comprehensive Information Database System (CIDS). The DAR wanted to connect to the CIDS to get vessel arrival information and to have the ability of searching the database when necessary. The main purpose for this link was to access this information from both agencies to use in a risk-matrix. The risk-matrix would be used to determine if an oversea vessel arriving in Hawaii would have a high likelihood of carrying alien aquatic organisms (high-risk category) and to determine whether or not the vessel should be inspected or not allowed in State waters. The other purpose for this link was to compare the DOT-HAR vessel arrival information with the DAR's mandatory ballast water reporting form submittals (currently administrative rules are being proposed that would require this form be submitted to the DAR), so the DAR could verify if a ballast water reporting form was sent for each vessel. This verification process will help the DAR measure compliance to the administrative rules. Currently, the ballast water reporting forms are required by Federal regulations, under the USCG's mandatory ballast water management program, for all vessels entering U.S. waters carrying ballast water.

National Ballast Water Information Clearinghouse's Pilot Project

The second prevention project involved the DAR participating in a National Ballast Water Information Clearinghouse (NBIC) pilot project. The NBIC is the Federal clearinghouse for the United State Coast Guard and receives all of the ballast water reporting forms submitted by vessels entering U.S. waters. The NBIC posts on its website the ballast water reporting forms that it receives, after the information is verified by a quality assurance quality control process. As a result, the most updated ballast water reporting form information on the website is more than 2 years old and not much use for the States that require the forms.

The pilot project was designed to allow a participating State to receive the ballast water reporting form at the same time the NBIC received it. This means that when the vessel submits the ballast water reporting form to the NBIC, the participating State gets the form concurrently. This would eliminate the need for arriving vessels to submit the ballast water reporting form to two agencies (the NBIC and State) and would increase compliance for both the Federal and State ballast water reporting form requirements. The DAR expressed interest in participating in the pilot project to the NBIC.

Outreach Material

The third prevention project was to develop and disseminate outreach material to inform the shipping industry about ballast water and hull fouling issues. These handouts will explain the problems and impacts associated with ballast water and hull fouling introductions, and what the DAR is developing to address these issues. The DAR would

like these handouts to 1) Raise the awareness of the shipping industry on these problems, 2) Increase compliance with the proposed administrative rules for ballast water, and 3) Minimize the future introduction of alien aquatic organisms into Hawaii from ballast water and hull fouling.

ACCOMPLISHMENTS

For the three-agency electronic communication linking project, the DAR was granted access to vessel arrival information on a portion of the CIDS that is posted on the DOT-HAR website. The DAR was also able to establish discussions with both the DOBOR and the DOT-HAR on the issue of ballast water and hull fouling introductions and discussed ways to improve communication in the future.

The DAR was able to purchase the necessary equipment (fax machine and computers) to receive and manage the ballast water reporting forms. The DAR will be accepting ballast water reporting forms via fax or email. With the advancement in technology of computer programs and fax machines, it is very easy for vessels to send an email (multiple addresses) or fax (group dialing) to multiple recipients. The DAR was able to establish a working relationship with the NBIC. The DAR also developed 4 educational handouts (Appendix A) for the shipping industry on: 1) Ballast water and hull fouling; 2) Administrative rules for ballast water that the DAR is proposing; 3) Snowflake coral (*Carijoa riisei*); and 4) Atlantic barnacle (*Chthamalus proteus*).

The ballast water and hull fouling handout contains information on the problems associated with ballast water and hull fouling, and a definition of what each is. The administrative rules handout explains how the DAR got involved in this issue, who helped draft the administrative rules, a brief overview of the rules, and suggested contents for a vessel specific ballast water management plan.

The other two handouts, the snowflake coral and the Atlantic barnacle, are examples of organisms associated with hull fouling, their distribution and their impact on native species. These organisms were chosen because each has something very interesting about it. The snowflake coral was believed to be a "shallow" water organism, but has been found overgrowing black coral trees at great depths. The Atlantic barnacle is distributed on all of the main Hawaiian Islands, except for Lanai and Kahoolawe, which receive little or no commercial vessel traffic.

The handouts were developed with the assistance of Scott Godwin of the Bishop Museum, Bruce Casler formerly of the Nature Conservancy, Chela Zabin, Jennifer Smith, and Sam Kahng of the University of Hawaii. The handouts are currently being disseminated by the DAR to the shipping industry.

NEXT STEPS

The DAR was not granted full access to the CIDS, because it contains confidential information that the DOT-HAR deemed inappropriate for the DAR to access. The DAR

will continue to assess what use can be made of the partial CIDS information that we have access to and work with the DOT-HAR to possibly getting more access to the non-confidential information on the CIDS.

An electronic link was not established between the DAR and the DOBOR because the DOBOR currently does not have a pre-arrival notification system for recreational vessels. The DOBOR collects the vessel arrival information after the vessel has entered its harbors. The DAR will explore the possibility of working with the DOBOR on this matter.

The NBIC did not select the DAR to participate in the pilot project. The DAR believes that it was not selected because the DAR did not have a mandatory ballast water reporting requirement in place at the time of selection. The DAR is in the process of making this requirement mandatory and may contact the NBIC again to inquire if Hawaii could be included in the pilot project.

The DAR plans on developing and distributing handouts on other organisms that have been introduced to Hawaii from ballast water and hull fouling. The DAR would like to collaborate with the University of Hawaii-Sea Grant program, or other institutions, on creating future handouts.

CONCLUSION

It is apparent that some changes or improvements are needed for all of the agencies mentioned. For the DOBOR, a pre-arrival notification system may have to be developed and be accessible to other agencies. The DAR and the DOT-HAR may have to hire a technical contractor to allow the DAR more access to the CIDS. The NBIC may have to expand the pilot project, so that the data can be found in one location for all States to access ballast water reporting information. Finally, the DAR must improve its communication and collaboration with the other agencies, to better enable the DAR to minimize the introduction of alien aquatic organisms from ballast water and hull fouling.

Attachment 4

DOH FY 2005 Prevention Projects report

Surveillance equipment and supplies

DOH Vector Control Branch (VC) purchased the following surveillance equipment for early detection of West Nile Virus (WNV):

1) 45 Centers for Disease Control (CDC) gravid traps and replacement parts (batteries, battery chargers, fan motors, and collection cages)
2) 8 New Jersey light traps and 24-hour timers
3) 1 box of RAMP West Nile virus test kits, 100/box

CDC gravid traps and replacement parts
VC maintains a system of gravid traps at major ports of entry state-wide for detection of WN virus. New Jersey light traps are also maintained state-wide for detection of new, immigrant mosquito species.

Mosquitoes were collected using gravid traps, some purchased with HISC funds, and then sorted and pooled by VC staff state-wide. Because the Neighbor Island VC programs are running their gravid traps seven (7) days a week, twenty-four (24) hours per day, many of the gravid trap parts, especially fan motors and batteries, have had to be replaced. In many cases, the HISC funds have paid for replacement parts and new traps. Other sources of funding for gravid traps have been CDC funds and VC Branch funds.

New Jersey light traps and 24-hour timers
On November 24, 2003, a VC entomologist on the Big Island discovered *Aedes japonicus japonicus* among mosquitoes collected from a New Jersey light trap at Laupahoehoe School. Later, in December 2003, a VC inspector on Oahu discovered a single *Anopheles punctipennis* specimen in a New Jersey light trap on Sand Island. Extensive larval surveillance by VC staff and additional light trapping and gravid traps in the area indicate that the *Anopheles punctipennis* did not become established in the port area. However, the *Aedes japonicus japonicus* on the Big Island did become established and has spread throughout the island. A HISC research grant ($2,243.00) has been awarded to the Big Island entomologist to survey and map the new invasive mosquito.

Eight (8) stainless steel New Jersey light traps and 24-hour timers were purchased with HISC funds to replace damaged traps state-wide.

RAMP WNV test kits
One (1) box of RAMP WNV test kits was purchased with end-of-year HISC funds and is being used by DOH laboratory staff in Hilo, Hawaii to test birds and mosquitoes for WN virus. During FY05, RAMP kits were used by Neighbor Island labs, including the lab in Hilo, Hawaii, to screen some birds and some mosquito pools for WNV. All RAMP screened birds and mosquito pools were also tested on Oahu using PCR test method at

DOH's State Laboratory Division (SLD) laboratory. Between July 1, 2004 and June 30, 2005, SLD on Oahu tested a total of 717 birds and 2993 mosquito pools for WNV using PCR tests. To date, WNV has not been detected in Hawaii by either RAMP test kits or PCR tests. Birds and mosquitoes collected on Oahu are not screened with RAMP test kits. Instead they are tested using PCR tests at DOH's State Laboratory Division.

Wildlife agencies, humane societies and other organizations continue to assist with the state-wide collection, temporary freezing (i.e., storage) and transportation of dead birds. All 717 dead birds that were collected during FY 2005 were necropsied at VC Oahu laboratory, and tissues were prepared and subsequently taken to DOH's SLD laboratory, where they were tested for the virus using PCR testing.

Response equipment and supplies

DOH Vector Control Branch purchased the following emergency response supplies and equipment to ensure state-wide ability to initiate WN virus response:

1) 3 truck-mounted ULV sprayers (2 Oahu, 1 Kauai)
2) 20 backpack ULV sprayers (8 Oahu, 8 Hawaii, 4 Kauai)
3) GPS-enabled pesticide flow-control devices for truck-mounted sprayers
4) 5 pocket Hygro-Thermo-Anemometers for use with truck-mounted sprayers
5) 20 hand-held portable anemometers for use with backpack sprayers
6) 7 amber highlighter light bars for trucks with ULV sprayers
7) Respirators/cartridges
8) Disposable gloves
9) Mosquito adulticides (Permanone 10 EC, Aqua-Reslin)
10) Mosquito larvicides (Vectobac, Vectolex, Altosid, and GB-1111 products)

Truck-mounted Ultra Low Volume (ULV) sprayers and backpack ULV sprayers
HISC funds enabled DOH to purchase 3 new truck-mounted ULV sprayers. As a result, DOH now has 7 new truck-mounted sprayers state-wide: 2 Oahu (HISC funds), 1 Kauai (HISC funds), 2 Hawaii, and 2 Maui. HISC funds also were used to purchase 20 new ULV backpack sprayers that were distributed as follows: 8 Oahu (HISC funds), 8 Hawaii (HISC funds), and 4 Kauai (HISC funds). Maui already had 4 backpack sprayers purchased with other funds.

The HISC funds allowed VC to standardize ULV sprayers state-wide. It also enabled the equipment representative to calibrate the truck-mounted ULV sprayers on each island and to train VC staff in the proper use of the sprayers. Now, during an emergency, neighbor island VC programs can share sprayers and trained staff.

Global Positioning System (GPS)-enabled pesticide flow control devices
Seven (7) GPS-enabled pesticide flow control devices were purchased from the vendor who provided the truck-mounted and backpack sprayers. Unfortunately, 4 of the 7 devices did not work properly in the field. They have been returned to the vendor and a

full refund has been made by the vendor to the State. VC will request that replacement devices be purchased with FY 2006 HISC funds.

Hand-held anemometers

DOH used HISC funds to purchase 5 rugged meters to enable VC staff to measure humidity, temperature, and air velocity before (and during) application of pesticides with truck-mounted sprayers. Twenty low-cost wind meters were also purchased for use by staff using backpack sprayers. The meters allow staff to monitor wind velocity and other weather parameters as needed for compliance with pesticide label requirements.

Safety equipment and personal protective equipment (PPE)

HISC funds were also used to purchase safety equipment, including amber light bars for 5 spray trucks. Personal protective equipment (PPE), such as respirators/cartridges and disposable gloves, was also purchased with HISC funds.

Mosquito larvicides

HISC funds were used to purchase pesticides that will enable VC staff to control mosquitoes breeding at routine treatment sites and to kill adult mosquitoes if WN virus is detected in Hawaii. The larvacides purchased include Vectolex, Vectobac, and Altosid products, and GB-1111.

Vectolex CG and Vectolex WDG should allow treatment of "polluted" *Culex* breeding sites on a 21 day cycle. Both these Vectolex products are approved for use in marine/coastal areas (i.e., salt marshes, mangroves, and estuaries), lakes, ponds, rivers, canals, and streams. In addition, and of special note, Vectolex WSP (water soluble packets) were purchased with the HISC funds and distributed to Oahu, Hawaii, Kauai, and Maui. These premeasured, water-soluble packets can be used by volunteers to quickly treat catch basins and other *Culex* breeding sites once WN virus is detected in Hawaii.

The purchase of Altosid XR briquettes enables treatment of mosquito breeding sites at 3 to 4 month intervals. This frees VC staff to conduct other mosquito control activities, including surveillance for mosquito breeding sites. Thirty-day Altosid briquettes were also purchased.

Mosquito adulticides

Adulticides purchased with HISC funds were Permanone 10 EC and Aqua-Reslin. The active ingredient of these products is permethrin. Currently, pesticide resistance testing of adult mosquitoes on each island shows no resistance to permethrin. The pesticide resistance tests were conducted by VC entomologists.

VC staff received pesticide refresher training on each island. The training was conducted by Hawaii Department of Agriculture's Pesticide Branch and included how to read pesticide labels and how to mix and apply pesticides.

Computer hardware and software

DOH Vector Control Branch purchased computer hardware and software for mosquito geographic information system (GIS):

1) Intel Xeon Processor and Windows 2003 Server, Standard Edition
2) 3 desktop computers with monitors
3) 1 network printer
4) 10 Axim X50 handhelds
5) 10 Pharos GPS with compact flash
6) SQL Server license and 5 VLA SQL Client 2000 per device
7) Vector Control Management System (VCMS) software
8) VCMS maintenance agreement (1 year)
9) ESRI GIS software

The DOH is just now receiving all of the equipment and software needed to begin setting up a GIS monitoring system at the DOH's VC facility in Halawa Valley, Oahu. Until recently, VC staff in Oahu entered data into stand-alone computers without the benefit of networking. This new system will ensure data integrity and will enable quick updates for statistical reporting and trend analysis of mosquito and other vector data.

Intel Xeon Processor and Windows 2003 Server, Standard Edition
VC installed Windows Server 2003 Standard Edition as a print, file and terminal server on a processor purchased with HISC funds. Thirteen (13) computers have been networked to this server. Ten (10) CALs were installed and now enable staff to use Microsoft Office Professional 2003 suite. Also, a recently updated Vector Control inspector database that tracks vector borne service requests and complaints, including mosquito complaints, was installed on the server and is currently being used by staff. In addition, two (2) ArcGIS 9.1 single use licenses and one (1) ArcGIS 9.0 Tracking Analyst will be installed on the server in late September 2005. The Windows Server 2003 Standard Edition, two ArcGIS 9.1 licenses and one ArcGIS 9.0 Tracking Analyst were purchased with HISC funds.

Desktop computers, monitors and network printer
HISC funds were used to purchase 3 desktop computers, which were distributed as follows: Oahu (1), Kauai (1), and Maui (1). The Infectious Disease VC Inspector II on Oahu, Entomologist IV on Kauai, and VC Inspector V on Maui, each received a new desktop computer and monitor. In addition, a new network printer was purchased for VC Oahu's new network and print server.

Hand-held PCs and GPS units
HISC funds were used to purchase 10 hand-held PCs and 10 hand-held GPS units for use with the VCMS system described below.

PowerEdge Xeon Processor and SQL Server license

VC purchased a PowerEdge Xeon Processor, using VC branch funds. The Microsoft SQL Server 2000 Standard Edition was installed on this processor and is now part of the new VC network. Although the processor was purchased with VC branch funds, the license for the VLA SQL Server Std 2000 and 5 VLA SQL Client 2000 per device were purchased with HISC funds.

Vector Control Management System (VCMS) and maintenance agreement

The HISC funds were also used to purchase the SQL-based version of ACR Corporation's Vector Control Management System (VCMS) which will be installed on the processor by the vendor, ACR in October 2005. VCMS is currently used by the Sacramento-Yolo Mosquito and Vector Control District in California. It is also used throughout Florida and in several other states for mosquito control and WN virus work. The installation of VCMS will allow VC to "pilot test" the system on Oahu. VCMS staff will visit Hawaii for 3 days, set up the system and train staff under the VCMS eCAre-MS SQL Server purchase. Workers will use the 10 mobile VCMS client software for PocketPC on 10 GPS enabled Del Axim X50s in the field to log mosquito breeding sources, to record pesticide usage and application by location, and to record trap locations and trap environmental data by location. The FieldBridge server will enable workers to sync the GPS enabled PocketPCs to a client computer set up in the Vector Control Branch computer room in our administration building. In addition, two additional client computers will be set up for the microbiologists and entomologists in our Vector Control laboratory building.

The installation will allow WNV data to be collected, monitored, analyzed, and shared with DOH's Disease Outbreak and Control Division and other programs, including wildlife programs, as needed. The system will enable staff to track pesticide usage and application rates, including locations and quantities of pesticides applied. Pesticide application information can be provided to other programs/agencies as needed. The system allows staff to generate reports and maps for management purposes such as sources needing attention, larval surveillance reports, treatment and pesticide usage reports, work history by selected location, mosquito reports and graphs.

ESRI GIS software

The VCMS system was designed to work with ArcView 9.1 and other GIS software, which will be installed on the new server (print, file, and terminal server). It also has a module for GPS/GIS tracking of truck-mounted pesticide sprayers. If the VCMS "pilot test" on Oahu is successful, it will be "rolled out" for use by neighbor island VC staff.